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## ABSTRACT

In an analysis of 20 scholarly journal articles in the hard sciences and 20 from the humanities, text was examined for author comments on hypotheses, probabilities, and evaluations. These include such expressions as "It cannot be denied, it seems likely, it was presumed," etc. Such comments were found to be somewhat more common in science-related articles, with frequency ranging from a high of 1.17 per sentence in a philosophy article to a low of 0.14 per sentence in an organic chemistry article. When analyzed for evidence of rhetorical sections, it appeared that generally, the science articles could be divided into three sections (beginning, middle, end), but the humanities articles had no consistent rhetorical "shape." In science articles, comments were most frequent in end sections, less so in beginnings, and least commonly observed in the middle. Functions of the comments were different in each section. Certain comments were found to be used more often than others and were different for the arts and sciences. It is concluded that the function of comments in academic prose is to express three types of certainty: information that is taken for granted; the purely hypothetical; and logical deduction. (MSE)

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## COMMENTS IN ACADEMIC ARTICLES

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### Introduction

The notion of *hedging*, as it is often called, has been around since the early 1970's. The term was first used by George Lakoff (1972), who spoke of "words whose job it is to make things fuzzy or less fuzzy". What he had in mind is the way in which we can express the extent to which we commit ourselves to particular propositions by, for instance, adding caveats like *I think*, or *sort of*, or *maybe*, or *it is said* to signal distance: or underlining our support or enthusiasm with a phrase like *there is no doubt*, *I'm sure*, *it is certain that* and so on. Though scarcely touched on in ELT, the concept has been interestingly discussed by Prince et al (1982) who look at physician-physician discourse; and Rounds (nd), who deals with what she calls "precision and flexibility" in academic discourse. Implicit in Rounds - and this is a point rather overlooked by Prince et al - is the idea of hedging as a resource rather than a failing, as a tool for making thought subtle rather than fudged. The term "hedging" itself has unfortunately pejorative connotations in ordinary language, and for this among other reasons I prefer to draw a distinction between *propositions* and the *comments* people make on them.

In general, however, there has been little discussion of commentative language, and fewer attempts to apply what is known, although it seems obvious that an understanding of the distinction between what people say and what they say about what they say is at the root of choice and subtlety in language.

In what follows I explore some of the issues involved through an analysis of academic prose, since it is intuitively in such highly self-conscious and self-monitoring text that the major dichotomy between the propositions one sets forth and the expressions of one's views on them are most obvious and their successful and delicate deployment most necessary.

### The Corpus

The corpus from which I have worked consists of 20 journal articles published since 1980 in *hard* science disciplines, and a further 20 from Humanities disciplines. The journals were chosen by consultation with specialist informants in each field, who were asked to nominate the leading academic journals of their discipline. Thereafter articles were chosen at random, except that review articles were excluded. Large chunks of such texts are, obviously enough, introduced by phrases of the type "Smith argues that...", which distances the author from the proposition that follows (which is Smith's argument, not his), but does so in a way which is frequently simply a report, and which is therefore not a com-

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ment as I wish to use the term.

Intuitively, commentative language will be associated with hypotheses, probabilities and evaluation rather than certainties or descriptions. Therefore one would expect commentative language to occur in different ways in articles from very different disciplines, and broadly speaking this is what my data bear out.

One's preconception of the Science article is perhaps that it moves from a brief statement of known certainties to the delineation of an unanswered question to a description of the procedure by which this question can be answered to, finally, a statement of what new information has now moved into the realms of the known.

On the other hand almost all study in the Humanities draws, to all intents and purposes, on a finite body of knowledge, a finite source of raw data. In the Humanities therefore new information is not typically discovered; scholarship involves, in essence, the re-evaluation of the known. Only one of my 20 Humanities articles have as their function to rehearse and reinterpret the known. One, on Ancient History, describes itself as "a propaedeutic study, its object being to clarify the source picture". (I am grateful for the author's gloss).

From this broad generalisation, one might expect certain sections of the Scientific paper (Discussion, for example) to be more commentative than others (Methods, say). This is what happens, though what is perhaps rather unexpected is the discovery that, at least for my data, discussion-type sections are marginally more commentative than the average Arts paper. But before I move to a quantitative analysis of the data I wish to follow through some theoretical problems.

### Types of Comments

Firstly, I have chosen to recognise three main comment-types. Type 2 and Type 3 are briefly discussed below. But I would argue that it is only what I have called Type 1 comments that can be defined, and therefore quantified, with anything approaching certainty, and it is to them, therefore, that I devote most of my discussion, and on which I have based all my data.

### TYPE 1 COMMENTS

As an instance of how such comments function, here is a stretch of text on Keats's poetry, shorn of all comment (including an intensifier, "far", which I would count as a Type 2 comment):

Keats's Ode is "about" the sound of a nightingale. The poem is more complex than such a bald, literal statement implies. It is "about" the power of sound in awakening the imagination.

Compare this with the original, with comments in italics:

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*It cannot be denied, of course*, that Keats's Ode is about the sound of a nightingale. *It would be equally impossible to deny that* the poem is far more complex than such a bald, literal statement implies. It is, *more properly*, "about" the power of sound in awakening the imagination.

(H1)

The fact that the second, original version is "better" than the first may serve to reiterate the obvious point, that comments are no bad thing. More interestingly, the doctored version reads haltingly and clumsily in a way that rather suggests it lacks cohesive ties. It seems likely, though it is not my present purpose to examine this, that comments may typically have a cohesive as well as a strictly commentative function. Finally, it will be seen that though some comments, like the first, third and fifth in the above, have the sentence as their domain some, like that "far", any comment only on a phrase, and indeed the phrase commented on may itself be a comment. Such appears to be the function of "of course" in this passage, as it reinforces the inevitability of "It cannot be denied".

The only realisation of a major category of comment represented in the data but not the above quotation is the use of a copula (other than "be") to indicate the tentative. Such comments commonly co-occur with other markers of commentative language, such as a probability indicator, as in the following (to illustrate how common comments are I have made a point of choosing this and the following quotations in this section from the same article, on Geology):

*It seems likely* that in many instances of deformation accompanied by chemical transformations, diffusion of matter in stressed interfaces is an essential part of the deformation process.

I have counted such double comments, with some hesitation, as two separate comments.

The following categories of Type 1 comments occur in the data:

- a) **copulas other than "be"**. These are used to express an area of uncertainty, or alternatively of possibility - it is sometimes hard to be sure in any particular instance which is intended, nor need we assume that the writer him/herself is always sure.
- b) **modal auxiliaries**. These are used to express uncertainty, as in the following:

The effective film thickness *may* also depend on stress, so that overall the stress sensitivity to strain rate *may* be complex, and not simply linear as implied by eq 4.

Modal uses for logical deduction are also fairly well represented, and look commentative in function:

it is to be expected that the development of such a microstructure *will* be most intense in fine-grained material.

...it seems likely that most natural pressure solution involves diffusion

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in intergranular aqueous films which *must* possess anomalous physical properties in order to account for their existence

The case is particularly clear here because both modal uses are tied to an earlier comment introduced by an *it is*: indeed, the use of *will* in the first example appears to be grammatically constrained by the impersonal which precedes it, an additional complication in quantifying the data, but one which is rare enough to ignore for present purposes.

- c) **adjectivals and adverbials introduced by *It is*, *This is*, *There is*, or which are sentence or clause-initial and immediately followed by a comma** (see below, for some of the problems with this classification). They function to comment on:
  - i) the degree of possibility or certainty of a proposition. This co-occurs with words like *possible*, *certain* and so forth
  - ii) the extent to which the proposition is perceived as significant or interesting. This co-occurs with words like *important*, *interesting* etc. (though for some problems with this sub-category, see below).

This is reminiscent of Swales on article introductions: though in fact this comment type may appear anywhere in an article.

- d) **lexical verbs, often of believing, arguing, doubting etc.** A difficulty here is the problem of distinguishing whether a particular occurrence of such a verb, in the context where other research is being mentioned, represents a comment on the research, or merely reports it. It is not absolutely clear in this quotation, for example, whether Griggs himself used some such phrase as *I presume*, and the present author is therefore simply reporting someone else's comment on the status of his work, or whether the present author is commenting, for the first time, on the fact that Griggs' work rested on a presumption which he did not acknowledge:

...*it was presumed* by Griggs (1940) that the flow of water-saturated limestone would be through a process of solution at grain impingements.... (S14)

Contrast the more straightforward:

...*it is well known that* pressure solution produces a range of spectacular microstructural manifestations in rocks naturally deformed under diagenetic or low metamorphic grade conditions, e.g. McClay (1977) (S14)

Here, there is no special difficulty in accepting this as a comment with the reference to McClay called in to support it. One more example:

*We believe* a key consideration is the alignment of the electrical field parallel to the axis of the bone. (S10)

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### TYPE 2 COMMENTS

Type 2 comments are concerned with the way adjectivals and adverbials in general function in academic text. At one end of the scale is the purely objective list of figures (at least, objective on the surface, though they may be tendentiously chosen): these are not comments. At the other end of the scale from such precise calibration is the subjective, imprecise, and therefore in some sense commentative description of such measurements as, say, *big*, or *considerable*, or, as in the following, *strong* and *high*.

....a strong relationship was found between physiological recordings and subjective assessment.

Between the same two physiological variables some showed high positive and others high negative correlation.... (S8)

It is obvious that here an evaluation is being made of a proposition: *There was a relationship. It was strong*. In this sense, and in the sense that the language used in such cases is often functionally suasive, this may be best regarded as a comment. To do so, however, would be to permit a bewildering and open-ended set of adjectives (and perhaps all adjectives) to be, always, commentative. There may be a certain amount of truth in this: it is in the nature of adjectives to be judgmental, but to follow this path is to cheapen the notion of the comment beyond value.

On the other hand, it is difficult to find a principled reason for acknowledging some of the following, and rejecting others:

It is clear there is a difference.

There is clearly a difference.

There is a clear difference.

The difference is clear.

With a great deal of hesitation I have arbitrarily accepted adjectivals and adverbials introduced by *It is*, *This is* or *There is* and those which are sentence or clause initial and followed by a comma. I make no further comment here, except to draw the reader's attention to the perhaps dangerous frequency, in the discussion sections of many scientific articles, of what I have here called *un-calibrated*, evaluative use of adjectives.

### TYPE 3 COMMENTS

It is a truism that every use of language is an act of choice, and in this sense therefore every choice is a comment on what is being discussed. From this it follows that there is an association between commentative language and stylistic markedness. This, however, is an area at once so large and so beyond description that it is not worth discussing in this context, however interesting.

Two examples from the same article, unusual but not unique:

A resulting optimism is that empiricists and theoreticians will increasingly

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speak a common language, contribute to each other's enterprise and together move out of the electrophoretic doldrum.

Just as the alchemist yearned for a formula that would turn into gold the modern biologist longs for a conceptual framework that will make any data set coruscate with revelations. The framework described here falls considerably short of such expectations, but then, modern chemistry has not fulfilled the alchemist's most ardent dream. (S10a)

As has frequently been said: science is not the coolly objective discipline it appears to be.

### Results

I turn now to the quantification of the data. It will be recalled that the numbers here refer only to a specific type of comment: this excludes a great deal that is evaluative in some sense, and a less substantial amount that involves the evaluation, and therefore some form of comment on, propositions. That is to say that the figures below only scratch the surface of the extent to which academic writing, including scientific writing, involves vagueness (in my sense, *uncalibrated judgement*).

The basic figures are given below:

Table 1

ARTS	
Type 1 Comments per 1000 words	10.74
Type 1 Comments per sentence	0.38
SCIENCES	
Type 1 Comments per 1000 words	11.14
Type 1 Comments per sentence	0.47

The reader is asked to recall that the study of commentative language is not well-developed, and that these figures should therefore be treated with a degree of caution, but the overall picture is unmistakable.

Comments are common in academic writing, and about equally common in Arts and Sciences. Moreover, given that they certainly appear to occur, overall, in between one third and one half of all sentences (and remember that I have excluded a great deal from consideration that is certainly commentative), they are a much more common feature of academic writing than, say, most verb tenses.

The range of frequency is, as one might expect, very considerable. The highest figure I found came from a Philosophy article. The figures here were 38.62 Type 1 Comments per 1000 words, which works out at 1.17 per sentence - given

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the frequency with which the domain of a comment is the sentence, this is an extraordinary figure. A brief extract of the discussion on the subject "Do Zygotes Become People?" will give the flavour of the article:

Here it might be said that I am essentially a person. More generally, it may be said that anything that is a person is essentially a person. It follows from this that I cannot exist, and so did not exist, at any time at which I fail to be a person. Granting that "my" organism was not a person eight or nine months before my birth, and granting also that no entity that was a person at this time has any sort of plausible claim to being me, it seems that I did not exist eight or nine months before my birth. (A19)

The lowest figure was from the field of Organic Chemistry and entitled "The Structure of Antibiotic A41030A". This gave a total per 1000 words of 5.15, and per sentence of 0.14. One might guess from the title that this is a purely descriptive piece, concerned only with certainty, and in fact - as we shall see, unsurprisingly - the only comments come in the concluding sections.

It is typical of articles in the Sciences that they are broken down into clearly labelled sections. However, the names of these labels and to a lesser extent their functions vary from article to article. Only two of the twenty in the corpus followed precisely the traditional "IMRAD" pattern of Introduction, Methods, Results, Discussion, though this general sequence, however labelled, and with or without deviations, could be discerned in the majority. Thus, the article just mentioned has the following sections

Introduction (which is not labelled)

Experimental Section

Results and Discussion (comprising 2/3 of the total article)

Conclusion

-and this degree of variation is not unusual.

Nevertheless, it has proved possible with the Science articles to identify three major sections, which I shall call simply beginning, middle and end. The beginning is either not labelled at all, or is called the Introduction. Its purpose, very broadly, is to place the present research in an academic context, and to justify it. This corresponds well with other findings in this area, eg Swales 1984 and Crookes 1985. The middle section may be labelled something like Methods, Methods and Results, Calculations, or it may have a label which is idiosyncratic to the article, and if it does, the middle section itself, in the data, always consists of more than one section. The function of this section, which may be either very short or very long, is to describe a particular experimental procedure, or a range of procedures; sometimes this may involve a degree of speculation more typical of the traditional Discussion section. The end section is variously labelled Discussion, Conclusion, or Results and Discussion. In one example, from the *American Mineralogist*, it is labelled Summary, and does in-



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deed have this function, but in all other cases the closing section is discursive, speculative and, in our sense, vague.

In the Arts, however, it is impossible to perceive any overall rhetorical shape in the division into sections. Either the article is not divided at all, or it is divided into sections which are numbered rather than labelled, or it is divided into sections which are labelled idiosyncratically. A single article has a Conclusion, but this in effect is a summary of the article as a whole and, interestingly, asserts - without comment - the arguments that have been more tentatively presented in what has gone before. This is, in other words, the least speculative part of the article. I quote the beginning:

The style of this passage reflects not just the inert turgidity of which Seneca is often accused, but a set of compositional principles by which he radically transforms his sources. He does not aim at the linear clarity of classical narration, but at a sharp and rapid counterpoint of strikingly individual and sometimes overlapping details.... (A11)

There is, in other words, no part of an Arts article which one can more certainly identify with commentative language than any other. Comments are equally likely to occur on the first page as the last.

With Science articles, however, one can be much more definite about things. A breakdown gives the following:

**Table 2**

**Science Articles: Type1 Comments per 1000 words.**

Beginning Section	9.70
Middle Section	4.39
End Section	19.33

That is, the beginning of a Scientific article is likely to be almost as tentative as an Arts article, while the end is likely to be a great deal more so. The middle section is not likely to be tentative, and indeed where this section is labelled Methods, or even Results, the amount of commentative language will be very much smaller than is indicated here, or may simply not exist.

The function of the comments in the beginning and ending sections is, however, very different. In beginnings, firstly, there are many examples of verbs often associated with hedging, such as verbs of arguing, saying and reporting, which are used to report on the previous research of others. These are included in the present data. Secondly, comments used to suggest tentativeness do so to raise questions which the article in question is to answer. These comments, in other words, imply the promise (often made explicit in a Swalesian Move 4), that what is now uncertain will be made certain:

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There are two different, but possibly reconcilable views of the alginate structure. (S14)

The electron gas approach....appears to offer strong promise. (S20)  
In endings, however, the function of the comment is to speculate once more about the unknown, but an unknown which has, thanks to the article, had its boundaries changed. The form however is likely to be indistinguishable:

The addition of the bulky chlorine to ring E appears not to be detrimental to antibiotic activity. (S11)

- with the exception, that is, of explicit markers of Conclusions such as:

We conclude, then, that for the MEG procedure to be useful for modelling many silicates or for predicting mineral structures, the theory must include treatments of anisotropic polarization.... (S20)

The most common comments were as follows:

Table 3

Arts	
<i>it seems that, seems</i>	11.49%
<i>might, might have</i>	8.04%
<i>may, may have</i>	6.90%
<i>apparently, it appears that, it appears + Inf</i>	5.75%
Sciences	
<i>it is possible that, possibly</i>	15.38%
<i>it appears that, it appears + Inf</i>	8.33%
<i>may</i>	7.70%
<i>it is interestingimportant that, interestingly</i>	11.54%

With the exception of the occurrence of expressions of interest and importance in Science articles, these figures look sufficiently like each other to be unremarkable, and the corpus is sufficiently small to make them no more than a guideline. The only real pointer of interest here is what is implied by the fact that the most common comments in the Sciences make up a rather higher percentage of all comments than in the Arts. There appears to be much greater latitude available to writers in the Arts as to how they comment on what they say. In all, there are 61 comments attested in Arts articles but not in the Science articles, and only 11 attested in the Science articles but not in the Arts. This latitude has no doubt something to do with an unconscious convention in the Arts that good style may be related to originality, and the contrary convention in operation in the Sciences, that good style and modest, objective anonymity go hand in hand. Thus, in a single Arts article, we have the following, all of which are unique to this paper:

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*I would see this as fresh Chian diplomacy.*

*this is even truer now that we have Chester Starr's masterly study.*

*I fancy that he would have included the earliest standardised tetradrachms*  
And the closing sentence is, as the author's personality intervenes with a flourish:

If they show the Thasian standard, I shall naturally be happy - but *not surprised*. (A13)

## Conclusion

One general remark about the function of comments in academic text is that they exist to express the complex interweaving of three types of certainty that exist in scientific enquiry. One is the certainty of the world the article takes for granted, those things assumed to be common ground and beyond fruitful discussion. When this certainty is called into question it is associated with a comment either to express doubt (*It may be doubted if...*), or to throw responsibility onto someone else, named or anonymous (*It has been suggested that....*). Or, if a comment is made at all, it may be simply to reinforce the unchallengeable status of the proposition (*It is well known that...*).

Another is the uncertainty of the purely hypothetical. This is most typical of the exploratory Discussion section of scientific articles, though it is strongly associated also with the hypothesis-making of opening sections in the sciences where the unknown and poorly understood are delineated.

A third is the certainty of logical deduction; as opposed to the *a priori* certainty of the first type, this is the *a posteriori* certainty of the smaller world of the article, and typically of the findings of an experiment it contains. This one might expect to be associated with the logical deduction of *must have* or *cannot have*, or with performatives of conclusion such as *we conclude* but this is rare, though an example has been given above. In fact it is often hard to distinguish when this *a posteriori* certainty shades into hypotheticality, the assumed diffidence of the author who wishes to downgrade his/her own conclusions to mere hypothesis.

The reasons for studying comments should need little rehearsing. In a way that is perhaps beyond directly research, the way in which people use language to talk about what they say lies at the heart of choice in language, and guarantees our ability to use language with subtlety, to mean precisely and with discrimination.

As far as the language classroom is concerned, the ability to use the commentative system of a language enables the learner, at every level, to use his/her limited linguistic resources to achieve greater delicacy of meaning. The switch away from the text sentences (which tended to be propositional in my sense) of the grammatical syllabus has been liberating to some extent, but the emphasis,

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particularly within EAP, on cohesion - the logical relationship of propositions - obscures the status of the propositions themselves; and information about this status is carried by the commentative system.

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